AUSTRALIA'S RESPONSE TO OIL SUPPLY DISRUPTIONS

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ABSTRACT

Australia's approach to managing oil supply disruptions relies on Australia's domestic supply capability balanced with the application of demand restraint measures and the use of oil stocks within the supply chain. Current stocks in Australia are held voluntarily by industry within each element of the supply chain. They are equivalent to over 340 days of Australia's net imports of liquid hydrocarbons. Australia's liquid fuels supply emergency response strategy provides the flexibility to respond to a diverse range of fuel supply disruption scenarios by allowing the implementation of a wide of range of measures depending on the nature of the supply disruption. This approach suits the size of Australia's economy, our level of petroleum self-sufficiency and enables Australia to meet its international obligations. The merit of Australia's approach needs objective consideration when examining stockpile policies across the APEC region.

BACKGROUND

Australia's relative isolation and dependence on transport makes it vulnerable to oil supply disruptions. Successive Australian Governments have therefore acknowledged a responsibility to adopt policies to minimise the likelihood of liquid fuels supply disruptions and to develop and maintain contingency plans to respond to such emergencies.

In terms of area, Australia is the sixth largest country in the world with a land surface of approximately 7.7 million square kilometres. This is roughly comparable to the area of the United States without Alaska. Australia is relatively sparsely populated with a current total population of roughly 19 million people. Our population centres are chiefly situated in coastal areas, and in many cases, are separated by considerable distances. We are therefore more reliant on transport than many other APEC economies.

Australia is a net energy exporter and has access to a wide range of fuels including black coal, brown coal (lignite), natural gas, crude oil and condensate, naturally occurring liquid petroleum gas (LPG) and renewable energy sources.

Figures from the Australian Bureau of Agricultural and Resource Economics indicate that Australia is currently 84% self-sufficient in relation to naturally occurring liquid hydrocarbons (crude oil, condensate and LPG). Our petroleum imports are sourced from a diversity of suppliers.

Australia is a member of the International Energy Agency (IEA) and places high importance on meeting the requirements for participation in the IEA's Emergency Oil Sharing System (EOSS) and Coordinated Emergency Response Measures (CERM).

There are eight petroleum refineries in Australia with capacities ranging from 60 to 136 kilo barrels per stream day. The small size of Australia's refineries is predominantly a function of historical investment outcomes, geographical factors and market size.

Refineries in Australia provide the bulk of the petrol, diesel and LPG used in Australia. Local petrol production in 2000-01 was 17,900 mega litres (Ml) or 98.3 per cent of local petrol sales. For diesel, local production in 2000-01 was 13,200 Ml. This amount exceeded local sales of diesel with the balance made up by imports, exports and stock changes. The production, trade and stocks of petrol, diesel, and LPG are presented below.

Land Transport Fuels: Production, Trade and Stocks: Australia: 2000-01#

	Petrol	Diesel	LPG
1999-00 Stocks ('000 tonnes)	700	700	100
Local Production (Ml)	17900	13200	1800*
Exports (Ml)	1300	1200	*
Imports (Ml)	1200	1100	600
Local Sales (Demand) (Ml)	18200	13000	2300
2000-01 Stocks ('000 tonnes)	600	600	100

Source: Department of Industry Science and Resources, Australian Petroleum Statistics, Issue 59, June 2001
Table may not reconcile due to rounding errors and revisions
* Refinery Production only, Naturally occurring LPG - 4600 Ml while exports of LPG are 2800 Ml.

On an energy equivalent basis (compared to petrol), diesel and petrol contribute about 95 per cent of the land transport task for Australia. Australian production, trade and stocks of aviation gasoline or aviation turbine fuel, fuel oil, and lubricants and greases are presented below.

Other Refinery Products: Production, Trade and Stocks: Australia: 2000-01#

	Aviation Turbine Fuel	Fuel Oil	Lubricants and Greases
1999-00 Stocks ('000 tonnes)	200	300	100
Local Production (Ml)	5800	2000	640
Exports (Ml)	2648	1000	278
Imports (Ml)	400	800	33
Local Sales (Demand) (Ml)	5300	1700	500
2000-01 Stocks ('000 tonnes)	200	300	100

Source: Department of Industry Science and Resources, Australian Petroleum Statistics, Issue 59, June 2001
Table may not reconcile due to rounding errors and revisions

Refineries in Australia also produce kerosene, heating oil, industrial and marine diesel fuel and bitumen and other minor products.

AUSTRALIA'S RESPONSE TO A LIQUID FUELS SUPPLY EMERGENCY

Australia's policy on using oil stocks during a supply emergency relies on stocks within the supply chain held by oil company refiners, marketers and importers. Australia has no separate government-owned oil stocks other than those held for military purposes. The key response measures relied upon during a liquid fuels supply emergency is demand restraint, the use of existing stocks and Australia's production capacity.

Australia is a federation comprising a central Commonwealth (federal) government, six self-governing States and two self-governing Territories. Australia's legislative power is shared between the federal and State and Territory governments. The subject matters about which the Australian Federal Government can legislate are generally limited to those set out in Australia's Constitution. In

comparison, the States have a broad power to legislate on all matters for the 'peace, welfare [or order] and good government' of the relevant State.

Under Australia's Constitution, the responsibilities of the federal government include defence, income and company taxation, interstate and foreign trade, foreign investment and compliance with international treaty obligations. State/Territory responsibilities include energy production, transport, land-use, mineral rights and environmental assessments.

The State and Territory Governments are responsible for planning and coordinating emergency arrangements (including fuels supply emergencies) within their territorial boundaries. The federal Government has a role where fuels supply emergency affects more than one jurisdiction, where the resources of an individual State/Territory are unable to cope with a shortage and where a disruption has national implications. The federal Government is also responsible for ensuring Australia complies with its IEA obligations.

Australia's consumption of petroleum is dominated by the transport sector, which is almost exclusively reliant on petroleum products. Lesser amounts of petroleum products are consumed in the mining, chemical, and manufacturing and construction sectors. Consumption in the residential sector is very low. The transport sector is therefore most likely to be affected by a supply disruption.

While the initial response to a liquid fuels supply emergency would generally rely on State/Territory legislation, the Australian Governor-General can, where a disruption is severe, declare a national liquid fuels supply emergency under the Liquid Fuel Emergency Act 1984 (LFE Act). The LFE Act provides for the allocation of scarce liquid fuels on a national basis to ensure the burden of a supply shortage is shared as evenly as possible.

The federal Minister for Industry, Science and Resources administers the LFE Act. The Minister has the power to delegate many of the powers conferred by the Act to State/Territory Energy Ministers, officials and authorised persons. It is expected that in practice the Minister will delegate extensively.

Australia undertook a comprehensive evaluation of its oil supply emergency measures in 1997/98. The review, which was commended by the IEA in its review of Australia's emergency response measures in 1998, led to the streamlining of the committee structure responsible for coordinating liquid fuels emergency response measures through the establishment of the National Oil Supplies Emergency Committee (NOSEC).

NOSEC oversees Australia's response to a liquid fuels supply emergency. The Committee comprises members from the federal Government, each of the States/Territories and the oil industry. NOSEC coordinates the adoption of emergency arrangements, the collection and provision of information and statistics, and relevant publicity.

NOSEC is also Australia's National Emergency Sharing Organisation (NESO) and is responsible for liaison with the IEA on matters of oil allocation and information exchange during an international fuel supply disruption.

Close liaison with the oil industry is essential to ensure both the effective and smooth implementation of workable response measures and to guarantee Australia's international obligations are met. Industry participation in NOSEC is intended to ensure industry views and expertise is considered in decision-making processes while enabling industry representatives to be kept informed of developments. The State/Territory Governments also maintain links with key industry players within their jurisdictions.

Demand restraint is usually implemented at the State/Territory level through voluntary and/or compulsory measures and can either restrict access to fuel from retail outlets or decrease fuel demand through measures such as lower speed limits. Demand restraint measures are generally easy to introduce, can be imposed quickly, and have a direct impact on a large proportion of the population by directly reducing fuel usage and increasing public awareness of the situation. Past experience has shown these measures can achieve a desired reduction in demand while enabling supplies to essential and high priority users to be maintained.

Australian Government policy is to allow oil price increases to flow through to consumers during a supply disruption. This policy reflects the need to maintain supplies through competitive prices while ensuring there are economic incentives to reduce demand. This policy also recognises that overseas suppliers and refiners would not sell to a market where prices are kept artificially low. The policy is in line with general Australian economic policy principles of competitively determined prices, and market access and free trade.

The efficacy of any response is at least partially dependent on the implementation of a number of different measures to reduce pressure on supplies. Australia's response plans provide for the adoption of a wide range of measures in addition to those already mentioned including surge production, use of stocks within the supply chain, increased imports of crude oil and/or products where available, increased domestic refinery yields of critical products and fuel switching (such as substitution of gasoline by LPG).

In the event of a national emergency, the emergency powers of the LFE Act give the Minister and his or her delegates the power to control the rate of drawdown of industry stocks and the power to control the physical transfer of those stocks. The Act's emergency powers also enable the Minister and his or her delegates to direct companies to sell specified quantities of liquid fuels to designated customers and to direct companies to produce specific products consistent with good refinery practice. The LFE Act also provides for the implementation of a national system of demand restraint, which would guarantee Australia's ability to participate in IEA oil sharing and emergency response arrangements. Penalties apply for non-compliance with the Act.

Planning and reporting provisions under the LFE Act enable the federal Government to monitor available stocks whether or not there is an emergency. The LFE Act also allows the Minister to direct companies to hold specific quantities of stock commensurate with the size of their operations thereby ensuring stocks are maintained at acceptable levels at all times. Current stock levels would enable supplies to be available to consumers for a considerable period of time following a supply disruption. Petroleum producers, major oil companies and some large consumers are currently required to report stock levels to the Australian Government each month.

ASUSTRLIAN GOVERNMENT POLICIES IN RELATION TO STOCKHOLDINGS

Governments need to consider both their specific circumstances and the efficacy of stockpiles in mitigating the effects of supply disruptions when determining stockpile policies. While stockpiles can and should be used to minimise the impact of short-term supply disruptions, their efficacy in countering large-scale supply disruptions warrants close examination.

It is often argued that stockpiles provide a buffer against price rises resulting from supply disruptions. While this is achievable in the very short term, emergency stocks are finite sources that will start to deplete sooner or later and their ability to influence long-term prices is limited. Eventual exposure to market prices is inevitable if there is a sustained disruption. In any case, it can be argued

that where trigger points for use are well understood, the presence of stockpiles will already be factored into prices.

Policies that place strong reliance on the use of stockpiles may insulate economies from the benefits of other approaches such as demand restraint, fuel conservation and switching, and options to increase fuel availability including surge production, increased imports and greater reliance on local supplies. These approaches can ease the pressure on supplies without incurring the ongoing costs of maintaining significant stockpiles.

Emergency response plans need to provide the flexibility to respond to different types of supply disruption ranging from small localised disruptions to major international fuels supply crises. While international supply disruptions are likely to have the greatest impact on the APEC region as a whole, localised disruptions (arising from events such as industrial disputes, refinery accidents or tanker problems) still have the potential to cause considerable hardship to local communities.

Measures to reduce consumption such as demand restraint and fuel switching may provide the only possible approach to managing localised supply disruptions. Regulatory frameworks to enable the quick and effective implementation of these measures need to be in place.

For Australia, the advantages of current policies, which rely on stocks available within the supply chain, are considerable. Australian petroleum industry stockholdings have averaged roughly 55 days' consumption in recent years. When Australia's current level of self-sufficiency is taken into account, this is equivalent to over 340 days' net imports of liquid fuel hydrocarbons. This level is considerably above the level needed before IEA stockholding requirements are imposed. It compares favourably with other APEC member economies.

Australia's petroleum stocks are held voluntarily by industry within the supply chain at no cost to taxpayers. The Government monitors stock levels to ensure adequate supplies are available in case of an emergency. Significant changes in stock levels are not expected in the foreseeable future.

Estimates suggest that the cost in current Australian dollars to purchase the oil required to establish a strategic reserve equivalent to 30 days of Australia's total demand (23.9 million barrels at $US28 per barrel) would be roughly $A1.3 billion. The construction cost (including site purchase, jetty, control building and other infrastructure) for such a facility is estimated at roughly $A1.1 billion. Annual operating costs have been estimated at approximately $A12.8 million. This level of expenditure is difficult to justify when the size of current industry stocks and the wide-ranging powers available to the Australian Government under the LFE Act are considered.

As previously indicated, Australian government policy is to allow price rises to flow through to consumers during a supply disruption. Australian studies have indicated that significant price rises do reduce the demanded quantity and level of fuel demand reflecting in part a degree of non-essential discretionary use for transport purposes.

There have been recent calls for smaller Asian oil-importing economies to establish joint stockpiles. While there may be advantages for oil-importing economies to maintain stockholdings, joint or shared stockpiles need careful consideration.

Joint stockpiles could reduce the initial capital outlay required to establish a stockpile by increasing economies of scale and enabling more cost-effective approaches to be considered. This approach, however, is largely untested and would rely on the development of effective cooperative arrangements between the relevant economies. Clear guidelines covering issues such as the responsibilities of participating economies and the circumstances under which stockdraws could be made would need to

be developed. The security implications of establishing a single or a small number of facilities to hold stockpiles for a number of different economies also warrant close examination.

AUSTRALIA'S POLICIES IN RELATION TO ENERGY SUPPLIES

Following the oil shocks in the 1970s, Australian government policies have sought to encourage the development of new oil fields within Australia and to reduce our dependence on oil through fuel substitution and improved fuel efficiency. Australia's energy policies continue to reflect a desire to diversify our supply sources both in terms of preferred energy mix and main suppliers.

Australia's oil consumption as a percentage of total energy use has declined from 50.5% in 1973/74 to 34.1% in 1997/98. Further declines in percentage (but not absolute) terms are projected in the medium term. The relative decline in oil consumption has been attributed to the substitution of petroleum products by natural gas and electricity in stationary applications, especially boilers and kilns in the manufacturing sector and space heating in the residential and commercial sectors. Australia's transport sector remains highly reliant on petroleum although there are a number of government programs in place to encourage the use of natural gas and LPG in internal combustion engines.

Australia's natural gas consumption has increased significantly from 6.6% of total energy use in 1973/74 to 17.9% in 1997/98. This is equivalent to an average annual growth of 7.1%. Natural gas is forecast to account for 28.9% of Australia's energy consumption in 2014/15. Energy consumption in the electricity sector has increased at an average rate of 4.2% in the period from 1973/74 to 1997/98 however the likelihood of further increases is limited.

As part of its efforts to diversify fuel sources and meet environmental objectives, the Australian Government has encouraged research into alternative energy sources and non-petroleum based fuels. A number of projects are being planned or are underway including projects examining coal based and gas to liquids fuels as well as biofuels. Australia's policies have also sought to encourage increased energy efficiency and fuel conservation.

CONCLUSION

In determining stockpile policies, the specific circumstances of the economy in question need to be carefully considered. Australia's liquid fuels supply emergency response strategy gives it sufficient flexibility to respond to a diverse range of fuel supply disruption scenarios and suits the size of our economy, our level of petroleum self-sufficiency, our current stock levels and our IEA obligations.

Current arrangements enable the government to control the rate of drawdown of industry stocks during an emergency without the significant costs associated with the establishment and maintenance of dedicated stocks. Australian federal and State/Territory emergency legislation and associated response plans also enable the quick and efficient implementation of cost-effective measures to limit demand.

While there has been much discussion of the merits of stockpiles, the benefits of other approaches often tend to be overlooked. In many cases these approaches may provide a viable alternative, or at least a useful complement, to stockpiles, and may be more cost effective when the ongoing costs of maintaining stockpiles are taken into account. It is important to highlight these advantages when considering regional policies in relation to stockpiles. The merit of Australia's approach needs objective consideration in this context.

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